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Spaceport News

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www.nasa.gov/centers/kennedy/news/snews/spnews_toc.html

Weeks of repairs ready Discovery

By Steven Siceloff
Spaceport News

Space shuttle Discovery is gearing up for an early December launch following a postponement to allow engineers time to consider two issues that developed during the countdown on Nov. 5.

Program managers said Nov. 18 that the shuttle's STS-133 mission would not launch before Dec. 3 at 2:52 a.m. In the meantime, engineers will continue evaluating repairs made to the ground umbilical carrier plate (GUCP). They also will look at the external tank's ribbed intertank area where new "doublers" were added to replace a part of two stringers that showed four cracks.

The GUCP developed a hydrogen leak during the Nov. 5 countdown. Since then, technicians working at Launch Pad 39A, where Discovery stands for its mission, took a series of careful measurements as they replaced the GUCP and secured the alignment of the plate against the outside of the tank.

They also connected a venting line to the plate that funnels gaseous hydrogen from the tank to a flame stack near the launch pad that safely burns off excess hydrogen.

The cracks in the stringers also are undergoing thorough examination. The cracks have been repaired at the pad in much the same manner that similar cracks were fixed on other tanks while it was being assembled at NASA's Michoud Assembly Facility outside New Orleans, La.

NASA/Ben Smegelsky

Technicians re-attach a vent line to the ground umbilical carrier plate (GUCP) on space shuttle Discovery's external fuel tank on Launch Pad 39A at Kennedy Space Center on Nov. 17. A hydrogen gas leak at that location during tanking for Discovery's STS-133 mission to the International Space Station caused the launch attempt to be scrubbed Nov. 5.

First, engineers determine how much of the cracked stringer to remove. Then the fasteners are removed from the damaged section and a Dremel grinder was used to cut off the stringer section. Workers at Michoud built special splice "doublers," pieces of metal twice as thick as the damaged stringers. They also made radius blocks that are attached at the forward end of the stringer base and fastened to the skin panel. Those were shipped to Kennedy along with replacement forward stringer sections.

Once in place, the replacement stringers and the reinforcement materials complete the intertank repairs.

The damaged stringer sections, about 13 inches long, were sent to Michoud for laboratory analysis. The results from a series of tests will be presented to Space Shuttle Program officials as the preparations to launch Discovery continue.

Technicians at Kennedy, working with about 35 from Michoud, have been inspecting the rest of the tank's section using high-tech scanners to look for similar faults, but none was found.

During the weekend of Nov. 20, workers sprayed foam insulation over the tank's repaired area and trimmed the foam to the proper aerodynamic shape to complete the work. The foam repair took place at the launch pad where an enclosure was built to allow the foam to cure in the proper environment. The enclosure allows temperature and humidity to be controlled.

With this work ongoing, the six astronauts who will fly Discovery to the International Space Station have continued their training for the flight at Johnson Space Center in Houston.

The veteran crew is led by Commander Steve Lindsey, formerly the chief of NASA's Astronaut Office. He last commanded the STS-121 mission. Eric Boe will make his second shuttle mission as a pilot. He last flew on STS-126, his first spaceflight.

Mission Specialists Michael Barratt, Tim Kopra and Nicole Stott will return to the station for the first time since they lived on the orbiting laboratory last year. They were on the station for only a few

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Inside this issue . . .

Simple tips can minimize effects of holiday stress

By Margaret Truitt
for Spaceport News

The holiday season, which begins for most Americans with Thanksgiving and continues through New Year's Day, often brings a few unwelcomed guests, namely: stress and depression. With so much pressure to pull off a perfect holiday, it's no wonder. From parties and shopping, to baking, cleaning and entertaining, there's little room left for peace and joy, right?

Well, with some simple tips, you can minimize all the inevitable stress and depression, and may even end up enjoying the holidays more than you thought possible.

Avoid reaching a "meltdown" status and remember the most common stress triggers: relationships, finances and physical demands. Try to remember what matters and forget what doesn't.

Here are 10 tips from the Mayo Clinic to prevent holiday stress:

Acknowledge your feelings. If someone close to you has recently died or you can't be with loved ones, realize that it's normal to feel sadness and grief. It's OK to take time to cry or express your feelings. You can't force yourself to be happy just because it's the holiday season.

Reach out. If you feel lonely or isolated, seek out community, religious or other social events. They can offer support and companionship. Volunteering your time to help others also is a good way to lift your spirits and broaden your friendships.

Be realistic. The holidays don't have to be perfect or just like last year. As families change and grow, traditions and rituals often change as well. Choose a few to hold on to, and be open to creating new ones. For example, if your adult children can't come to your house, find new ways to celebrate together, such as sharing pictures, e-mails or videotapes.

Set aside differences. Try to accept family members and friends as they are, even if they don't live up to all your expectations. Set aside grievances until a more appropriate time for discussion. And be understanding if others get upset or distressed when something goes awry. Chances are they're feeling the effects of holiday stress and depression, too.

Stick to a budget. Before you go gift and food shopping, decide how much money you can afford to spend. Then stick to your budget. Don't try to buy happiness with an avalanche of gifts. Try these alternatives: donate to a charity in someone's name, give homemade gifts or start a family gift exchange.

Plan ahead. Set aside specific days for shopping, baking, visiting friends and other activities. Plan your menus and then make your shopping list. That'll help prevent last-minute scrambling to buy forgotten ingredients. And make sure to line up help for party prep and cleanup.

Learn to say no. Saying yes when you should say no can leave you feeling resentful and overwhelmed. Friends and colleagues will understand if you can't participate in every project or activity. If it's not possible to say no when your boss asks you to work overtime, try to remove something else from your agenda to make up for the lost time.

Don't abandon healthy habits. Don't let the holidays become a free-for-all. Overindulgence only adds to your stress and guilt. Have a healthy snack before holiday parties so that you don't go overboard on sweets, cheese or drinks. Continue to get plenty of sleep and physical activity.

Take a breather. Make some time for yourself. Spending just 15 minutes alone, without distractions, may refresh you enough to handle everything you need to do. Take a walk at night and stargaze. Listen to soothing music. Find something that reduces stress by clearing your mind, slowing your breathing and restoring inner calm.

Seek professional help if you need it. Despite your best efforts, you may find yourself feeling persistently sad or anxious, plagued by physical complaints, unable to sleep, irritable and hopeless, and unable to face routine chores. If these feelings last for a while, talk to your doctor or a mental health professional.

Hectic holidays?

If you're feeling overwhelmed, remember help is available through the Employee Assistance Program (EAP). For more information, contact Patricia Bell at 861-8647 or Walt Hersing at 867-7398.

NASA/Dimitri Gerondidakis

On Launch Pad 39A at Kennedy Space Center, a technician climbs toward an environmental enclosure on space shuttle Discovery's external fuel tank on Nov. 15. The enclosure will provide protection from wind, temperature and humidity changes while foam is re-applied and cured on the tank.

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days together, with Kopra returning to Earth on the same shuttle that carried Stott into space. Barratt flew to the station in a Russian Soyuz capsule in March 2009, and returned to Earth in October following 199 days in orbit. Stott returned as part of the STS-129 crew in November 2009.

Mission Specialist Alvin Drew flew to the station as part of the STS-118 crew that added a section to the station's truss. Drew and Kopra are scheduled to make two spacewalks during Discovery's mission.

STS-133 also marks the last mission for NASA's oldest active shuttle. Discovery first flew on Aug. 30, 1984, on a mission to test several technologies that eventually would be put to use on the International Space Station.

Its resume includes deployment of NASA's Hubble Space Telescope in 1990 and two Return to Flight missions in 1988 and 2005.

Discovery and its six astronauts are scheduled to spend 11 days in space and return to Kennedy's Shuttle Landing Facility.

NASA/Dimitri Gerondidakis

On Nov. 16, a technician holds a new doubler that was installed on a stringer of space shuttle Discovery's external fuel tank.

ISS prepares for upcoming decade of research

By Cheryl Mansfield
Spaceport News

"If you build it, they will come," may have worked as a movie theme in "Field of Dreams," but space experts agree that it's time to spread the word that the International Space Station is open for business.

Several hundred leaders in space and science met in Cape Canaveral, Fla. on Nov. 16 and 17 to explore ways to open the vast and exciting research capabilities of the space station to a wide array of uses. The setting for the discussion was the 2010 National Conference of the American Astronautical Society.

"The space station is truly a remarkable facility," said Bob Cabana, director of Kennedy Space Center and a former astronaut who, along with Russian Cosmonaut Sergei Krikalev, was the first to enter the fledgling station in 1998 after the Unity and Zarya modules were joined.

"What it is to me, the most remarkable part of it, is as an engineering test bed. When you look at the environmental control systems that are on it, that's where we can really learn. When we go to the moon or Mars, we're not going to be able to come home in a few hours like we can from the space station."

Those attending the gathering heard leaders from NASA and all the major international partners discuss their agencies' plans for the future, as well as their hopes for the next 10 years of operation of the completed station, which was characterized as a world-class research facility in the microgravity of space and a great platform for discovery.

"Now we have this amazing facility in space. I remember how many presentations I gave with graphical representations of the space station, of what it would look like, but then today to have in front of you an actual image of the space station, the real hardware that is in orbit with six crew members, it's pretty phenomenal," NASA Associate Administrator for Space Operations Bill Gerstenmaier told the crowd. "We've achieved this wonderful thing, but that's not enough. We have 10 years in front of us. We need to figure out with the same zeal, the same dedication, the same ability to challenge the difficult situations we are sure to face, to figure out how to utilize the space station in the most effective manner we can."

The American Astronautical Society, which was founded in 1954, used the occasion to honor Gerstenmaier with its 2010 Space Flight Award.

Throughout the two days of meetings, panels of experts from government, industry, science and education presented a look at past and present research in space as they pointed the way toward the means for achieving full use of the one-of-a-kind capabilities of the station.

"If we don't do these experiments in space, we'll never know what we don't know," said Dr. Julie Robinson, program scientist for the station at Johnson Space Center in Houston. Robinson's comment seemed to sum up the simple underlying reason for the gathering's theme to promote full use of the station's laboratories for the coming decade.

In 2005, the NASA Authorization Act designated the United States' segment of the station as a "National Laboratory" and directed the agency to develop a plan to increase the facility's use by other federal entities as well as the private sector. With the station's construction phase now completed, those gathered at the conference heard the call to step up the focus on this concept to get the message out to a wider audience.

One panel focused on the various types of materials research possible aboard the station's labs, such as studying bacteria growth like MRSA to help develop vaccines back on Earth to tackle growing health concerns. Discoveries regarding other health issues such as bone loss during long-duration spaceflight can assist Earth-bound researchers in the treatment of both the elderly and of patients requiring long immobile recuperation. External platforms on the station can assist in the development of materials for future spacecraft that can better weather the harsh environment of space.

"For 10 years, this unbelievable orbiting laboratory has not been without human life aboard. That's an outstanding feat, and so much has been accomplished over the past decade thanks to this engineering marvel," said Janet Petro, deputy director of Kennedy Space Center.

Participants challenged those in attendance to help not only spread the word about the station's assets, but to assist in developing partnerships that will help get research projects to space -- those developed by the largest corporations down to the small, student-run or individually developed experiments.

The whole spectrum of future transportation vehicles that can get experiments to and from the station was presented, including those of the international partners, as well as the new commercial ventures currently in development under NASA's Commercial Orbital Transportation Services (COTS) Program.

The conference closed with inspiration from those currently on the front line being discussed: the International Space Station. Astronaut Scott Kelly, who will soon take over as Expedition 26 commander at the station, and the current Expedition 25 commander, Doug Wheelock, spoke on behalf of the entire station crew and helped send the participants off with renewed dedication to seeing the station used to its greatest potential, benefiting life on Earth and future exploration of space.

NASA

NASA astronaut and Expedition 21 Flight Engineer Nicole Stott uses a watering syringe to supply water to the Cell Biology Experiment Facility (CBEF) SPACE SEED experiment in the Kibo laboratory on the International Space Station. The next decade will allow full use of the station's laboratories for more experiments.

Scenes Around Kennedy Space Center

NASA/Frankie Martin

NASA Orion Production Manager Scott Wilson shows tourists how an Orion crew exploration vehicle and its launch abort system would be stacked for launch at the Kennedy Space Center Visitor Complex on Oct. 29.

NASA/Jack Pfaller

A dexterous humanoid astronaut helper, known as Robonaut, demonstrates its talents to media Nov. 2 with Ron Diftler, NASA's Robonaut 2 (R2) project manager at Kennedy Space Center. R2 will be delivered to the International Space Station on space shuttle Discovery's STS-133 mission. Although R2 will initially only participate in operational tests, upgrades could eventually allow the robot to realize its true purpose -- helping spacewalking astronauts with tasks outside the orbiting laboratory.

NASA/Ben Cooper

A crawler-transporter moves a mobile launcher platform with two solid rocket boosters perched on top from Kennedy Space Center's Vehicle Assembly Building (VAB) High Bay 1 to High Bay 3 on Oct. 27. Inside, the boosters will be joined to an external fuel tank in preparation for space shuttle Endeavour's STS-134 mission to the International Space Station targeted to launch in February 2011.

NASA

Kennedy Space Center representatives signed an exclusive license agreement in Headquarters on Nov. 9 with Denmark-based environmental company JORD●MILJØ A/S for the manufacture, use, and sale of the Activated Metal Treatment System (AMTS) technology. The technology extracts polychlorinated biphenyls (PCBs), which can be toxic to the environment, from paint, caulk, concrete and wood and breaks them down into benign byproducts. Seated is the president and CEO of JORD●MILJØ A/S, Peter Claudi Rasmussen. Standing, from left, are Dr. Pat Simpkins, director of Kennedy's Engineering Directorate, Dr. Jacqueline Quinn, a technology innovator with NASA, Karen Thompson, Kennedy's chief technologist, Dr. Cherie Geiger and Dr. Christian Clausen III, technology innovators with Scientific Specialists Inc., Jim Nichols, licensing manager with Kennedy's Innovative Partnerships Program Office, Dave Makufka, lead with Kennedy's Innovative Partnerships Program Office, and Randy Heald with Kennedy's Patent Counsel Office.

NASA/Jack Pfaller

Jose Perotti shares information on the Smart Electrical Current Signature Sensor and software developed to monitor the health and status of solenoid valves used in Kennedy Space Center Ground Support Equipment (GSE) at the KEA-71 in the Training Auditorium on Nov. 19. The system is a non-invasive sensor that contains embedded knowledge (smarts) about the valve being monitored and is capable of detecting and ultimately predicting potential failures before they happen.

NASA/Jack Pfaller

Kennedy Space Center, in partnership with CRS Recycling, sponsored an electronics collection event Nov. 16 in the parking lot near the Vehicle Assemble Building. The group collected all types of electronics found around the home and workplace, including cell phones, computers and TVs. They did not, however, accept items containing mercury and Freon. The event was held in coordination with America Recycles Day 2010 on Nov. 15.

National Space Club honors Kolcum award winners

The National Space Club of Florida recently named Tracy Yates, manager of communications and public relations for United Space Alliance at the Kennedy Space Center, and John Glisch, editorial page editor of FLORIDA TODAY, as the 2010 Harry Kolcum Memorial News and Communications Award Winners during a luncheon at the Radisson Resort at the Port in Cape Canaveral, Fla., on Nov. 9.

Tracy Yates

John Glisch

As USA's spokesperson in Florida, Yates is responsible for preparing public statements and communications on launch operations and work force activities at Kennedy. Her contributions this past year to the Florida Space Day 2010 activities in Tallahassee and in working with media on stories related to the retirement of the space shuttle fleet are particularly noteworthy. Before joining USA in 2004, she spent time as a journalist in Georgia and as a state government communications specialist in Pennsylvania. She assumed her present role at USA in July 2008. A native of Pittsburgh, she earned a degree in journalism from Penn State in 1981. Yates lives in the Suntree area of Melbourne, Fla., with her husband, Jim Lacey.

Glisch is considered to be one of the Space Coast's leading local voices in commenting on actions taken by policymakers at all levels. That has been especially true this past year as he has written extensively about changes to NASA and the space program as a result of decisions made by the White House and Congress. His career spans 35 years having spent 25 years as a reporter, editor and editorial writer covering every aspect of the space program from launch and mission operations at the Cape to the politics of budget and policy in Washington, D.C. He has twice been nominated for a Pulitzer Prize. A native of Milwaukee, he earned a degree in journalism and political science from Marquette University in 1977. Glisch lives in Cocoa Beach, Fla., with his wife, Merry Lynn, and daughter, Allie. He is an avid Green Bay Packers fan.

Each year, the National Space Club Florida Committee recognizes area representatives of the news media and communications professions for excellence in their ability to communicate the space story along Florida's Space Coast and throughout the world.

The award is named in honor of Harry Kolcum, the former managing editor of Aviation Week & Space Technology, who was Cape bureau chief from 1980 to 1993 prior to his death in 1994. Kolcum was a founding member of the National Space Club Florida Committee.

Engineer recognized for innovative wheelchair invention

By Linda Herridge
Spaceport News

A desire to help others is what motivated Salim Nasser to invent a design for a new kind of wheel that could help millions of wheelchair users greatly reduce the stress on their upper arms and hands. What started as a senior project when he was a graduate student at Florida International University in Miami now is the Rowheel Wheelchair Propulsion System.

Nasser, a mechanical engineer in the analysis branch of Kennedy Space Center's Engineering Directorate, recently entered his Rowheel design in the NASA Tech Briefs "Create the Future" design contest. He was selected as the grand prize winner from nearly 1,000 innovative product ideas submitted by engineers and students representing 51 countries.

His efforts earned him a trip to New York City to

receive the award, which included a $20,000 cash prize.

"I was really surprised," said Nasser, who has himself been in a wheelchair since he was 20 years old. "It's more than winning a prize. For me, it's about shedding light on a need for this type of product and hopefully finding someone to partner with me on its development."

Engineering Design Analysis Branch Chief Doug Willard said that in addition to being a technically skilled engineer, Nasser has the creativity and curiosity to tackle difficult problems in new ways.

"His invention elegantly solves a real problem and is an example of what he brings to NASA every day," Willard said.

Nasser said a company in Pennsylvania has expressed interest in manufacturing the Rowheel, and Georgia Tech's Rehabilitation Engineering and Applied Research (REAR) Laboratory has offered its support to help bring the product to market through validation, development and testing.

Nasser has submitted preliminary patents on the design and is preparing to submit a non-provisional utility patent.

According to Nasser, the Rowheel Wheelchair Propulsion System prototype achieves forward motion by pulling, instead of pushing, on the "push" rims through the use of a planetary gear system at the center of the wheels. The intent is to reduce the incidence of upper body, repetitive stress injuries on manual wheelchair users by using the stronger back and biceps muscles and providing a mechanical advantage through the gear ratio.

"It is designed more for people who have mobility in their arms and hands and could be added to existing manual wheelchairs," Nasser said.

Nasser is from Colombia, but grew up in Houston. After college, he worked as a co-op at Johnson Space Center, before coming to Kennedy in 2007.

Currently, he is working as an analyst on a trade study team that is studying the redesign of the mobile launcher.

He also is the lead analyst for other engineering designs related to the Constellation Program.

"I've always liked the space program and it's great to be part of something special," Nasser said.

In his spare time he listens to music, goes to concerts and likes to travel. His most recent trip was to Washington, D.C., a place he had never been before.

Remembering Our Heritage

Refuge HQ moved to spaceport 40 years ago

By Kay Grinter
Reference Librarian

NASA announced that steps were being taken to acquire 80,000 acres of Florida land for a large space vehicle launch facility north and west of the Air Force Missile Test Center on Cape Canaveral in September 1961. That facility would become the John F. Kennedy Space Center. Playalinda Beach, east of the city of Titusville, was included in the purchase.

As construction of the Vehicle Assembly Building got under way in 1963, the 140,000-acre Merritt Island National Wildlife Refuge was established as an overlay of the space center. The refuge is managed by the U.S. Fish and Wildlife Service and the beach by the Canaveral National Seashore. Both fall under the auspices of the U.S. Department of the Interior.

NASA file photo

Above, wild pigs eat near a road that runs through Kennedy Space Center, which coexists with the Merritt Island National Wildlife Refuge.

In November 1970, refuge headquarters moved from Titusville into a newly renovated building on center property, about one mile west of the Kennedy Parkway on State Road 402. Besides being in the thick of refuge activities, the new facility was designed to better accommodate conservation and educational groups.

Cecil Boggs has been the security manager for launch and landing at Kennedy since the first space shuttle launch in 1981.

"The only concession we had to make to co-exist with the wildlife was to put fences around the pads," Boggs said. "Otherwise, our relationship with the refuge has had no problems."

NASA alum Cal Burch, former chief of Protective Services, concurred. "The thousands of wild hogs on center were always a concern to us because of traffic accidents and to the refuge because of damage to the turtle nesting areas," Burch explained. "We worked closely with the park service officers to control the hog population. Contracts with hog and alligator trappers were managed through the refuge office."

Access to Playalinda Beach has been limited during launch campaigns because State Road 402 is within NASA's three-mile security zone surrounding Launch Pad 39B.

In April 1993, a new road opened that provided almost continuous visitor access to the beach.

Railroad tracks were moved so a new section of the road leading to the beach could be built on the former track path. The 3.7-mile section of the roadway was relocated to place it north of NASA's security zone.

For security though, public access to Playalinda Beach must be prohibited starting about four days before each shuttle launch, but clearing the pad perimeter is easily managed with the cooperation of the park rangers. "They clear the backwoods area from the ground," Boggs said. "We follow up with a sweep by helicopter."

Nancy Corona has been a public use ranger at the refuge for the past eight years and feels that she and the refuge are very fortunate to be co-located with Kennedy. "It's exciting to work here," Corona said. "On one hand, we see bobcats, manatees and bald eagles nesting; on the other, there are rockets launching."

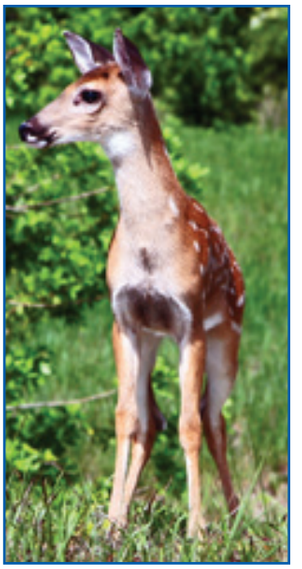
Corona provides recreational and educational opportunities for visitors to the refuge and for the community. "Visitors can see land preserved in its wild state and technology developed for the space program on the same day," she said. "NASA has provided tremendous support to the refuge. Our partnership couldn't be better."

The Merritt Island Wildlife Refuge will host a Scrub Jay Festival on Feb. 12 on behalf of the Florida Scrub Working Group. The festival will promote public awareness of scrub as an important part of the ecosystem and is a habitat on which scrub jays depend for their survival. Biologists and other environmental specialists from Kennedy are expected to participate.

For additional information about the Merritt Island National Wildlife Refuge and its upcoming events, visit **www.fws.gov/merrittisland/**.

NASA file photo

An adult bald eagle rests on the ground near a pond close to State Road 3.



NASA file photo

A young white-tailed deer is spotted in the brush near Launch Complex-14 at Cape Canaveral Air Force Station.

NASA file photo

An alligator is on the move next to a canal at Kennedy's Press Site. Alligators can be spotted in the drainage canals and other waters surrounding Kennedy, which coexists with the Merritt Island National Wildlife Refuge, habitat to more than 310 species of birds, 25 mammals, 117 fish and 65 amphibians and reptiles.

Upcoming events . . .

Nov. 30 (Aeronautics) The KSC Education Office in collaboration with the Speakers Bureau is launching a new program, Kennedy Educate to Innovate (KETI); noon to 1 p.m.; Headquarters, Room 3358. POC: Dina Davila, 861-1912 or **ksc-keti-program@mail.nasa.gov**

Dec. 1 KETI - STEM Hands-on I; noon to 1 p.m.; KLI; POC: Jessica Paglialonga, 867-2926 or **ksc-keti-program@mail.nasa.gov**

Dec. 7 KETI - STEM Hands-on II; noon to 1 p.m.; KSC Training Auditorium, Classroom 112 POC: Jessica Paglialonga, 867-2926 or **ksc-keti-program@mail.nasa.gov**

Dec. 8 (Rocketry) The KSC Education Office in collaboration with the Speakers Bureau is launching a new program, Kennedy Educate to Innovate (KETI); noon to 1 p.m.; Headquarters, Room 3358. POC: Dina Davila, 861-1912 or **ksc-keti-program@mail.nasa.gov**

Dec. 2, 9, 16, 23 Final opportunity in 2010 to sign a section of the VAB wall designated as a tribute to the Space Shuttle Program. POC: Clark Ford, 861-5971 or **clark.d.ford@nasa.gov,** or Lisa Leger, 861-3484 or **lisa.l.leger@usa-spaceops.com**

Dec. 19 NASA Day at Sun Life Stadium; Miami Dolphins vs. Buffalo Bills; 1 p.m. POC: Annette Myers, 867-0431

Looking up and ahead . . .

No Earlier Than Dec. 3	Launch/KSC: Discovery, STS-133; 2:52 a.m. EST
No Earlier Than Dec. 10	Launch/CCAFS: SpaceX Falcon 9, COTS-1;
Targeted for Jan. 22, 2011	Launch/CCAFS: Atlas V, SBIRS GEO-1; TBD
Targeted for February	Launch/CCAFS: Atlas V, GPS IIF-2; TBD
Feb. 23, 2011	Launch/VAFB: Taurus, Glory; 5:10 a.m. EST
Targeted for Feb. 27, 2011	Launch/KSC: Endeavour, STS-134; 3:35 p.m. EST
No Earlier Than April 14, 2011	Launch/CCAFS: SpaceX Falcon 9, Dragon C2; TBD
No Earlier Than June 6, 2011	Launch/CCAFS: SpaceX Falcon 9, Dragon C3; TBD
No Earlier Than June 9, 2011	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; TBD
Aug. 5, 2011	Launch/CCAFS: Atlas V, Juno; Launch Window 11:54 a.m. to 12:24 p.m. EDT
Aug.15, 2011	Launch/ Kwajalein Atoll, Reagan Test Site: Pegasus, NuSTAR; TBD

WORD ON THE STREET

The International Space Station is is nearing completion and is a full-time laboratory. What kind of experiments would you perform in space?

"Ultimately find more ways to get children's ideas for experiments We'd be surprised what they come up with."

Sandy Walsh, with NASA

"Organic chemistry so more organic foods can be bought cheaper allowing everyone to take advantage of a healthier lifestyle."

Chris Hochreiter, with Innovative Health Applications

"Maybe experiment to find ways of getting normal people, people who aren't astronauts, to live in space."

Monica Edwards, with Institutional Services Contract Training

"Some medical experiments that are difficult or impossible to do in a gravity environment such as stem cell research."

Mike Omans, with URS Corp.

"Figure out ways to deal with global warming. Find a better way to monitor climate changes that ultimately might help us."

Leroy Smith, with NASA

John F. Kennedy Space Center

Spaceport News

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